

Applicants submit that the imposed rejection under 35 U.S.C. §103 lacks the requisite realistic motivational element and improperly relies upon Applicants' disclosure. In addition, it is apparent that the Examiner improperly ignored potent indicia of nonobviousness. Applicants, therefore, solicit reconsideration and withdrawal of the imposed rejection under 35 U.S.C. §103 based upon the arguments set forth infra.

There is no motivation.

It has been repeatedly held by the Court of Appeals for the Federal Circuit that in order to establish the requisite realistic motivation, the Examiner must make "clear and particular" factual findings as to a specific understanding or specific technological principle which would have realistically impelled one having ordinary skill in the art to modify a prior art reference (the acknowledged prior art method) to arrive at the claimed invention based upon facts--not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Ecolochem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab*, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). Moreover, and quite significantly, such motivation must be undertaken with a realistic expectation of success. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As often stated by the Court of Appeals for the Federal Circuit, "obvious to try" is not the appropriate standard. *Ecolochem Inc. v. Southern California Edison, Co.*, *supra.*; *In re O'Farrell*, 853 F.2d 894, 7 USPQ2d 1673 (Fed. Cir. 1988); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988).

In applying the above legal tenets to the exigencies of this case, Applicants submit that the requisite motivational element is lacking. Specifically, the present invention does not merely entail removing photoresist after etching. Rather, the present invention is directed to removing a photoresist mask at a rapid rate without **degrading a low-k material**. Conventional techniques employ an oxygen-plasma.

Solis, the allegedly teaching reference, makes **no** mention of a **low-k material**. Solis is primarily concerned with removing **polymer residues** on metal sidewalls and, in that context, removes the remaining photoresist material. However, Solis is **not** concerned with preventing the degradation of a **low-k dielectric** material. It is **not** apparent and the Examiner has **not** made any "clear and particular" factual findings to support the conclusion that one having ordinary skill in the art would have been realistically motivated to employ the "very aggressive" etch gas mixture comprising CF₄ and H₂O in situations involving a **low-k dielectric** material which is subjected to degradation with a reasonable expectation of success, i.e., avoiding **degradation**, of the low-k material. *In re Vaeck, supra*.

The only basis for such a realistic expectation of success is found in Applicants' disclosure which, of course, can not be properly relied upon to support the ultimate legal conclusion of obviousness under 35 U.S.C. §103. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 227 1 USPQ2d 1593 (Fed. Cir. 1987).

Obviousness is not Inherency

To whatever extent the imposed rejection is predicated upon the theory that **if** the technique of Solis is applied during processing of low-k material, **then** the claimed

invention would result, such an approach is legally erroneous. The Court of Appeals for the Federal Circuit has frequently held that such a back door approach to obviousness improperly confuses obviousness with inherency. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); *In re Shetty*, 566 F.2d 81, 195 USPQ 753 (CCPA 1977); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). Indeed, as recently held by the Honorable Board of Patent Appeals and Interferences in *Ex parte Schricker*, 56 USPQ2d 1723, 1725 (Fed Cir. 2000):

Inherency and obviousness are somewhat like oil and water-
they do not mix well.

Evidence of Nonobviousness

It is well settled that the problem addressed and solved by a claimed invention must be given consideration in resolving the ultimate legal conclusion of obviousness under 35 U.S.C. §103. *North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 28 USPQ2d 1333 (Fed. Cir. 1993); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990); *In re Newell*, *supra.*; *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975). In this respect, Applicants stress that the claimed invention addresses and solves the problem of photoresist mask removal in situations involving an underlying **low-k dielectric** material without degrading the low-k dielectric material as in the case of oxygen plasma stripping. Solis neither addresses nor offers a solution to this problem. Under such circumstances, the problem addressed and solved by the claimed invention must be given consideration at a potent indicium of **nonobviousness**. *Jones v. Hardy*, 727 F.2d 1524, 220 USPQ 1021 (Fed. Cir. 1984).

Moreover, evidence in the specification must also be given consideration anent to the nonobvious issue. *In re Soni*, 54 F.3d 746, 34 USPQ2d 1685 (Fed. Cir. 1995); *In re Margolis*, 785 F.2d 1029, 228 USPQ 940 (Fed. Cir. 1986). In this respect, Applicants would refer to the comparative data appearing on page 17 of the written description of the specification evincing a dramatic preservation of Si-H bonds attendant upon the claimed invention vis-à-vis conventional solvent cleaning and oxygen plasma techniques.

Dependent Claims

Applicants separately argue the patentability of the dependent claims. Applicants would specifically argue the patentability of **claims 3 and 16** which relate to HSQ, a material which is not addressed by Solis and subjected to comparative testing in the specification.

Applicants separately argue the patentability of **claims 4 and 15** which limit the increase of the dielectric constant of the gap filled layer or dielectric layer.

Applicants further separately argue the patentability of **claim 5** which further limits the increase in the dielectric constant of the gap filled or dielectric layer.

Applicants separately argue the patentability of **claims 6, 7 and 17**, which limit the amount of reduction in Si-H bonds of the as deposited HSQ layer. Again, Solis, the allegedly teaching reference, does not mention HSQ which was also subjected to comparative testing in the specification.

Applicants further separately argue the patentability of **claims 8 and 18**, which specify the dielectric constant of the HSQ after photoresist mask removal and cleaning.

As previously pointed out, Solis does not mention HSQ which was also subjected to comparative testing in the specification.

Conclusion

Based upon the foregoing Applicants submit that a prima facie basis to deny patentability to the claimed invention has not been established. Moreover, upon giving due consideration to the potent indicia of **nonobviousness** stemming from the problem addressed and solved by the claimed invention and the comparative data in the specification, the conclusion appears escapable that one having ordinary skill in the art would **not** have found the claimed invention **as a whole** obvious within the meaning of 35 U.S.C. §103. *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984).

Applicants, therefore, submit that the imposed rejection of claims 1 through 20 under 35 U.S.C. §103 for obviousness predicated upon the acknowledged prior art in view of Solis is not factually or legally viable and, hence, solicit withdrawal thereof.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this

09/498,336

paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



Arthur J. Steiner

Registration No. 26,106

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 AJS:ntb
Date: October 16, 2001
Facsimile: (202) 756-8087